

obstruction, and the course of the disease to a fatal termination is shorter. A double occlusion in the lower ileum produces much less damage than in the upper.

6. The action of the gastric juice, bile, pancreatic juice, and duodenal secretions are not a requisite in producing the symptoms and pathological changes seen in intestinal obstruction, because these are produced by a double occlusion in the upper ileum when none of these secretions are blocked.

7. Simple occlusion of the pylorus does not necessarily produce any evidence of a toxemia in two weeks, and the gastric mucosa at the end of this time shows no evidence of being damaged.

8. The above findings indicate that death from intestinal obstruction in dogs results from the presence of toxic substances in the circulating blood which produce fatal lesions in the kidney, liver, and other tissues. The essential factor which admits these substances into the blood is an injury to the lining cells of the intestine caused by the irritating action of the stagnated contents, together possibly, with the mechanical damage due to stretching. The poisons themselves may arise from the secretory activity of the various digestive glands, or from bacterial activity. They may be the same as those found in the normal tract or they may be substances newly formed under the conditions of stagnation. What ever their source, they are innocuous so long as the mucosa remains normal.

We desire to acknowledge our indebtedness to Drs. Ewing, Lusk, Elser, and Huntoon of the Cornell Medical College, not only for valuable advice and suggestion in this work, but also for material aid in carrying out the pathological and bacteriological investigations connected with it.

LOSS OF EMOTIONAL MOVEMENT OF THE FACE WITH PRESERVATION OR SLIGHT IMPAIRMENT OF VOLUN- TARY MOVEMENT IN PARTIAL PARALYSIS OF THE FACIAL NERVE.

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THE voluntary and emotional movements of the face are independent of one another, and one form may be lost without loss of the other. Von Bechterew¹ says a number of observations show

¹ Die Funktionen der Nervencentra, vol. ii, p. 1144 et seq.

positively that the emotional movements in man are accomplished by means of special tracts which have no relation to the tracts concerned with voluntary movement. Cases of paralysis are known in which voluntary movements of the face, or of the lower part of the face, were lost and emotional movements (laughing, crying) of the face were performed in a normal manner. In discussing these cases, Nothnagel remarked that when the voluntary movement of the face is lost in hemiplegia from a focal lesion, but both sides of the face take part in equal degree in emotional movement, one may assume that the optic thalamus and its connections with the cortex are uninjured. Cases in which the emotional movements of the face have been lost and the voluntary movements preserved have been reported by v. Bechterew, Nothnagel, Rosenbach, Kirilzew, Gowers, and many others.

According to v. Monakow,² it has long been known that in many cases of hemiplegia the face on the affected side cannot be moved voluntarily, but the paretic facial muscles at once contract, as well as those of the other side, when the patient laughs or cries. v. Monakow expresses his belief that a part of the sensory reflex tract for laughing or crying is situated in the optic thalamus.

The experimental work of Roussy³ throws doubt upon the optic thalamus as a reflex centre for emotional movements of the face, as does the work of Ernest Sachs,⁴ who, in the report of his experiments upon the optic thalamus states that stimulation produced facial movements of the opposite side. He adds: "It is desirable, perhaps, to repeat here that these motor phenomena constitute no evidence of special centres in the thalamus for automatic or rhythmic movements, as has been assumed by some authors." One possibly might make the objection that the results obtained in animals are not applicable to man.

Lewandowsky⁵ believes the opinion regarding the optic thalamus as an emotional centre is not well founded. There are so many negative cases in the literature that a relation of paralysis of emotional movement to thalamic lesions cannot be maintained. Even in the cases in which thalamic lesions have been found, different parts of the thalamus have been affected. It is not improbable, he adds, that the assumption of a relation between emotional facial movements and a thalamic lesion is without foundation.

The paralysis of one form of facial movement without impairment or with only slight impairment of the other may result from a lesion of the facial nerve, or may be a pseudoparalysis from imperfect innervation. I have observed persons who in smiling or speaking innervated one side of the face so much less than the other that paresis of one side seemed to be present, and yet the drawing up

² *Gehirnpathologie*, Nothnagel's System.

⁴ *Brain*, Part 126, vol. xxxii, p. 1909.

³ *La couche optique*, p. 185.

⁵ *Allgemeine Neurologie*, Part 2, p. 741 et seq.

of the corners of the mouth, as in showing the teeth, was equally good on the two sides.



FIG. 1.—In smiling, only the right side of the face showed contractions of muscles.



FIG. 2.—In showing the teeth, contractions of the muscles were only a little less pronounced on the left side of the face. The reproduction does not show these contractions so well as does the photograph. The photographs were taken after the operation. The dissociation of facial movements was more pronounced before the operation.

What I especially desire to call attention to at the present time is loss of emotional movement of one side of the face with preserva-

tion or possibly only slight impairment of voluntary movement of the same side, as indicative of a certain stage of peripheral facial palsy. I have observed this phenomenon especially in slight facial weakness resulting from the pressure of a tumor of the cerebellopontile angle upon the facial nerve. The movement of the face normally is less intense in smiling or crying than in showing the teeth, and, therefore, a slight paresis of the facial nerve might cause loss of these emotional movements on one side of the face, and the weakness might be overcome by the forcible effort made to contract the lower part of the face in showing the teeth. The case was one referred to me by Dr. W. H. Snyder and Dr. Louis Miller, of Toledo, Ohio, October 23, 1910. In smiling the man drew up the right side of the face strongly and the left side weakly, but in showing the teeth or drawing up the corners of the mouth separately, the left facial weakness was slight. Dr. C. H. Frazier operated and found a tumor in the left cerebellopontile angle pressing upon the facial nerve.

It is important to recognize that this form of dissociation of facial movement may be the first sign of weakness of the facial nerve from pressure of a cerebellopontile angle tumor, and in connection with slight nerve deafness may be of localizing value. It is possible that the impairment of emotional movement may result, in part at least, from the pressure of the tumor upon the medulla oblongata and pons. I am unable to determine at present whether or not the impairment of emotional movement of the face occurs in most cases of tumor of the cerebellopontile angle.

THE RELATIONSHIP BETWEEN ERYTHEMA NODOSUM AND TUBERCULOSIS, WITH THE REPORT OF A CASE.

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ERYTHEMA nodosum has been variously regarded as a simple variety of erythema multiforme, as a definite specific contagious disease (Paulouch, Oppert, Batigne et al.), and as a secondary manifestation in many differing conditions, such as the infectious diseases, drug ingestion, alimentary disturbances, and nervous diseases.